

D_{2h}^7
 $P2/m2/n2_1/a$

No. 53

 $Pmna$

	Axes	Coordinates	Wyckoff positions								
			$2a$	$2b$	$2c$	$2d$	$4e$	$4f$	$4g$	$4h$	$8i$
I Maximal translationengleiche subgroups											
[2] $Pmn2_1$ (31)			$2a$	$2a$	$2a$	$2a$	$4b$	$4b$	$4b$	$2 \times 2a$	$2 \times 4b$
[2] $P2na$ (30) $\cong Pnc2$	b, c, a	y, z, x	$2a$	$2a$	$2b$	$2b$	$2 \times 2a$	$2 \times 2b$	$4c$	$4c$	$2 \times 4c$
[2] $Pm2a$ (28) $\cong Pma2$	a, c, -b	$x + \frac{1}{4}, y, z + \frac{1}{4}$ $x + \frac{1}{4}, z + \frac{1}{4}, -y$	$2c$	$2c$	$2c$	$2c$	$4d$	$4d$	$2a; 2b$	$2 \times 2c$	$2 \times 4d$
[2] $P222_1$ (17)		$x + \frac{1}{4}, y, z$	$2a$	$2a$	$2b$	$2b$	$2 \times 2a$	$2 \times 2b$	$2c; 2d$	$4e$	$2 \times 4e$
[2] $P112_1/a$ (14)			$2a$	$2c$	$2d$	$2b$	$4e$	$4e$	$4e$	$4e$	$2 \times 4e$
[2] $P12/n1$ (13)			$2a$	$2d$	$2b$	$2c$	$4g$	$4g$	$2e; 2f$	$4g$	$2 \times 4g$
[2] $P2/m11$ (10) $\cong P12/m1$	c, a, b	z, x, y	$1a; 1e$	$1b; 1d$	$1f; 1g$	$1c; 1h$	$2i; 2j$	$2k; 2l$	$4o$	$2m; 2n$	$2 \times 4o$

II Maximal klassengleiche subgroups
Enlarged unit cell, non-isomorphic

[2] $Pbna$ (60) $\cong Pbcn$	a, 2b, c c, a, 2b	$x, \frac{1}{2}y, z; + (0, \frac{1}{2}, 0)$ $z, x, \frac{1}{2}y; + (0, 0, \frac{1}{2})$	$4a$	$4b$	$4c$	$4c$	$8d$	$2 \times 4c$	$8d$	$8d$	$2 \times 8d$
[2] $Pbna$ (60) $\cong Pbcn$	a, 2b, c c, a, 2b	$x, \frac{1}{2}y + \frac{1}{4}, z; + (0, \frac{1}{2}, 0)$ $z, x, \frac{1}{2}y + \frac{1}{4}; + (0, 0, \frac{1}{2})$	$4c$	$4c$	$4b$	$4a$	$2 \times 4c$	$8d$	$8d$	$8d$	$2 \times 8d$
[2] $Pmnn$ (58) $\cong Pnmm$	a, 2b, c 2b, c, a	$x, \frac{1}{2}y, z; + (0, \frac{1}{2}, 0)$ $\frac{1}{2}y, z, x; + (\frac{1}{2}, 0, 0)$	$2a; 2d$	$2b; 2c$	$4g$	$4g$	$4e; 4f$	$8h$	$8h$	$2 \times 4g$	$2 \times 8h$
[2] $Pmnn$ (58) $\cong Pnmm$	a, 2b, c 2b, c, a	$x, \frac{1}{2}y + \frac{1}{4}, z; + (0, \frac{1}{2}, 0)$ $\frac{1}{2}y + \frac{1}{4}, z, x; + (\frac{1}{2}, 0, 0)$	$4g$	$4g$	$2b; 2c$	$2a; 2d$	$8h$	$4e; 4f$	$8h$	$2 \times 4g$	$2 \times 8h$
[2] $Pbnn$ (52) $\cong Pnna$	a, 2b, c 2b, c, a	$x, \frac{1}{2}y, z; + (0, \frac{1}{2}, 0)$ $\frac{1}{2}y, z, x; + (\frac{1}{2}, 0, 0)$	$4a$	$4b$	$4c$	$4c$	$8e$	$2 \times 4c$	$2 \times 4d$	$8e$	$2 \times 8e$
[2] $Pbnn$ (52) $\cong Pnna$	a, 2b, c 2b, c, a	$x, \frac{1}{2}y + \frac{1}{4}, z; + (0, \frac{1}{2}, 0)$ $\frac{1}{2}y + \frac{1}{4}, z, x; + (\frac{1}{2}, 0, 0)$	$4c$	$4c$	$4b$	$4a$	$2 \times 4c$	$8e$	$2 \times 4d$	$8e$	$2 \times 8e$

Enlarged unit cell, isomorphic

[3] $Pmna$	3a, b, c	$\frac{1}{3}x, y, z; \pm (\frac{1}{3}, 0, 0)$	$2a; 4e$	$2b; 4e$	$2c; 4f$	$2d; 4f$	$3 \times 4e$	$3 \times 4f$	$4g; 8i$	$4h; 8i$	$3 \times 8i$
[p] $Pmna$ $p = \text{prime} > 2; u = 1, \dots, p-1$	pa, b, c	$\frac{1}{p}x, y, z; + (\frac{u}{p}, 0, 0)$	$2a;$ $\frac{p-1}{2} \times 4e$	$2b;$ $\frac{p-1}{2} \times 4e$	$2c;$ $\frac{p-1}{2} \times 4f$	$2d;$ $\frac{p-1}{2} \times 4f$	$p \times 4e$	$p \times 4f$	$4g;$ $\frac{p-1}{2} \times 8i$	$4h;$ $\frac{p-1}{2} \times 8i$	$p \times 8i$
[2] $Pmna$	a, 2b, c	$x, \frac{1}{2}y, z; + (0, \frac{1}{2}, 0)$	$2a; 2d$	$2b; 2c$	$4h$	$4h$	$4e; 4f$	$8i$	$2 \times 4g$	$2 \times 4h$	$2 \times 8i$
[2] $Pmna$	a, 2b, c	$x, \frac{1}{2}y + \frac{1}{4}, z; + (0, \frac{1}{2}, 0)$	$4h$	$4h$	$2b; 2c$	$2a; 2d$	$8i$	$4e; 4f$	$2 \times 4g$	$2 \times 4h$	$2 \times 8i$
[3] $Pmna$	a, 3b, c	$x, \frac{1}{3}y, z; \pm (0, \frac{1}{3}, 0)$	$2a; 4h$	$2b; 4h$	$2c; 4h$	$2d; 4h$	$4e; 8i$	$4f; 8i$	$3 \times 4g$	$3 \times 4h$	$3 \times 8i$
[p] $Pmna$ $p = \text{prime} > 2; u = 1, \dots, p-1$	a, pb, c	$x, \frac{1}{p}y, z; + (0, \frac{u}{p}, 0)$	$2a;$ $\frac{p-1}{2} \times 4h$	$2b;$ $\frac{p-1}{2} \times 4h$	$2c;$ $\frac{p-1}{2} \times 4h$	$2d;$ $\frac{p-1}{2} \times 4h$	$4e;$ $\frac{p-1}{2} \times 8i$	$4f;$ $\frac{p-1}{2} \times 8i$	$p \times 4g$	$p \times 4h$	$p \times 8i$
[3] $Pmna$	a, b, 3c	$x, y, \frac{1}{3}z; \pm (0, 0, \frac{1}{3})$	$2a; 4h$	$2b; 4h$	$2c; 4h$	$2d; 4h$	$4e; 8i$	$4f; 8i$	$4g; 8i$	$3 \times 4h$	$3 \times 8i$
[p] $Pmna$ $p = \text{prime} > 2; u = 1, \dots, p-1$	a, b, pc	$x, y, \frac{1}{p}z; + (0, 0, \frac{u}{p})$	$2a;$ $\frac{p-1}{2} \times 4h$	$2b;$ $\frac{p-1}{2} \times 4h$	$2c;$ $\frac{p-1}{2} \times 4h$	$2d;$ $\frac{p-1}{2} \times 4h$	$4e;$ $\frac{p-1}{2} \times 8i$	$4f;$ $\frac{p-1}{2} \times 8i$	$4g;$ $\frac{p-1}{2} \times 8i$	$p \times 4h$	$p \times 8i$

Nonconventional settings

interchange letters and sequences in Hermann–Mauguin symbols, axes and coordinates:

$Pbmn$	$a \rightarrow b \rightarrow c \rightarrow a$	$\mathbf{a} \rightarrow \mathbf{b} \rightarrow \mathbf{c} \rightarrow \mathbf{a}$	$x \rightarrow y \rightarrow z \rightarrow x$
$Pncm$	$a \leftarrow b \leftarrow c \leftarrow a$	$\mathbf{a} \leftarrow \mathbf{b} \leftarrow \mathbf{c} \leftarrow \mathbf{a}$	$x \leftarrow y \leftarrow z \leftarrow x$
$Pnmb$	$a \rightleftharpoons b$	$\mathbf{a} \rightleftharpoons -\mathbf{b}$	$x \rightleftharpoons -y$
$Pcnm$	$a \rightleftharpoons c$	$\mathbf{a} \rightleftharpoons -\mathbf{c}$	$x \rightleftharpoons -z$
$Pman$	$b \rightleftharpoons c$	$\mathbf{b} \rightleftharpoons -\mathbf{c}$	$y \rightleftharpoons -z$